Applicants: John W. RAPP et al.
Filing Date: January 18, 2002

Application No.: 10/052,744
Attorney Docket No.: 1934-001-05

REMARKS/ARGUMENTS

Claims 2-22 and 29-37 are currently pending in the present patent application.

§ 112 First Paragraph Rejection

In the final Office Action mailed April 7, 2010, the Examiner rejects claims 2-22 and 29-37 under 35 USC § 112, first paragraph, as failing to comply with the written description requirement.

The Examiner asserts that "[t]he claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There are no supports within the specification stating that 'the system determining a required communication protocol from a plurality of communication protocols and selecting communication protocol interface configuration information based on said determining....'"

Paragraph 42 of the present application states embodiments of "the present invention provide[] a self-configuring hardware abstraction layer that generalizes and manages hardware-software communication processes to greatly reduce the extent to which application software 530 is dependent upon hardware configuration details. In one embodiment, a framework and interface system 200, in conjunction with a signal database 400 [see Figure 1], serves as a configuration and communication interface between one or more sensing and/or control subsystems 120 and application software 530 to provide the aforementioned abstraction layer as described in detail hereafter. The hardware abstraction layer is a self-configuring layer to provide the required communications. Thus, the layer configures itself to provide the required communications, and such self-configuration of course requires that the layer select the required communications protocol. There of course must be more than one such communications protocol to select from, or else no selection would be required or could be made.

The prior amendments to claim 5 merely expressly recite this operation and are clearly supported by, for example, paragraph 42 just discussed above. The amended claim 5 recites that the signal database stores interface communications configuration information corresponding to a manner of managing communication between the hardware subsystem and the self-configuring application services system via a plurality of communication protocols. Part of the self-configuration is the communications protocol to be utilized so, as just mentioned, there of course must be more than one such communications protocol (i.e., a plurality of communications protocols).

Claim 5 also recites the self-configuring interface system includes an interface system configuration module coupled to retrieve interface configuration information from the signal database and to facilitate communication between the hardware subsystem and the self-configuring application services system via a selected one of the plurality of communication protocols. The minor amendment to this element of claim 5 is, once again, merely to clarify the function of this element and is fully supported by paragraph 42 of the specification, for example.

For these reasons, the undersigned attorney for Applicants respectfully submits that claim 5, as well as claims 2-4, 6-22, and 29-37 satisfy the first paragraph of Section 122 and the rejection of these claims on this basis should be withdrawn.

The Rejections Under 35 USC § 103

In the current Office Action, the Examiner rejects claims 2-22 and 29-37 under 35 USC § 103(a) as being unpatentable over US Patent No. 5,469,361 to Moyne (hereinafter "Moyne") in view of US Patent No. 5,980,078 to Krivoshein et al. (hereinafter "Krivoshein").

Claim 5

Claim 5 recites, in part, a self-configuring application services system, a signal database storing interface communications configuration information corresponding to a manner of managing communication between the hardware subsystem and the self-configuring application services system via a plurality of communication protocols, and a self-configuring interface system coupled to the hardware subsystem and the application services system and comprising an interface system configuration module coupled to retrieve interface configuration information from the signal database and utilizes the retrieved interface configuration information to facilitate communication between the hardware subsystem and the self-configuring application services system via a selected one of the plurality of communication protocols. The minor amendment to claim 5 is, once again, merely to further clarify the recited subject matter and make clear that the interface system configuration module retrieves interface configuration information from the signal database and uses this information to facilitate communications through a selected one of the plurality of communication protocols.

The Examiner now points to the I/O interpreter 25, column 7, lines 30-40 as disclosing the recited signal database and column 12, lines 10-20, as disclosing a plurality of communication protocols. Neither the I/O interpreter 25 nor any other components in Moyne disclose or suggest the signal database and self-configuring interface system. The I/O interpreter 25 in Moyne is described in detail in column 11, lines 55-67 and column 12, lines 1-20. More specifically, the I/O interpreter 25 "translates protocol specific information into information with a specified facility wide message format... [and] thereby isolates most of the functionality of the controller from communication protocol specific information." See column 11, lines 56-61. The I/O interpreter 25 is illustrated in Figure 2 and the operation illustrated in more detail in Figure 5. The I/O interpreter 25 removes protocol specific information from incoming data leaving application specific information for incoming messages and does the reverse for outgoing messages. See column 12, lines 1-9.

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An example of the operation of the I/O interpreter 25 is given in column 12, lines 10-20. In this example the I/O interpreter 25 provides two-way translation from a common message format known as SECS-II that is utilized in semiconductor manufacturing facilities to another message protocol being utilized over a communication network (parent computer interface 27 shown Figure 2). For example, the communication network utilizing any standard ISO communications protocol, such as Ethernet, RS-232, and so on. See column 12, lines 10-20.

The Examiner acknowledges on page 3 of the final Office Action that the Moyne patent does not disclose a signal database storing interface communications configuration information. Accordingly, no such functionality is performed by or contemplated as being performed by the I/O interpreter 25. Moreover, from the description above in the context of the Moyne patent there is no need for such functionality. A known ISO communications standard is selected and the I/O interpreter 25 functions to receive information from a communication interface 27 in the associated ISO communications protocol and removes associated protocol specific information to provide the corresponding information in the system wide message format, SECS-II in the example provided in Moyne. The I/O interpreter 25 functions in reverse for outgoing messages taking information in the system wide message format and adding required protocol specific information for the selected ISO communications protocol. See Figure 5.

The Examiner then once again points to Krivoshein for alleged disclosing a signal database storing interface configuration information. See page 3 of the Office Action. Even if Krivoshein is considered to disclose such a signal database, there is no teaching, suggestion, or motivation for combining Moyne and Krivoshein as proposed by the Examiner. In the example provided in Moyne the communications protocol is selected and the system implemented. Devices having different protocols are not added to and simultaneously utilized in the system. The protocol with the approach of Moyne is a system wide protocol that would likely be infrequency, if ever, changed for such a system/plant wide type system. In contrast, with the approach of

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the system of claim 5 devices utilizing different protocols can be utilized and automatically configured via the interface system configuration module.

Furthermore, Krivoshein does not disclose a signal database that discloses a signal database storing interface communications configuration information that includes information regarding a plurality of communication protocols. Krivoshein discloses a configuration database and configuration of devices using the database, but only in the context of a single fixed communications protocol. The example in Krivoshein is the FieldBus protocol. See column 17, lines 1-4. Krivoshein fails to teach or suggest a signal database that stores communications protocol interface configuration information corresponding to a manner of managing communication between the hardware subsystem and the application services system. Krivoshein assumes communication via a single predefined standardized communications protocol. See col. 21, lines 63-67 through col. 22, lines 1-35. All the configuration information discussed therein does not relate to communications protocol information but instead relates to other configuration parameters that are communicated over an assumed predefined standardized communications protocol. For example, an element of the "configuration database" referred to as "Device Tables" are discussed as defining a variety of configuration parameters, such as CAN segment numbers, controller MAC address, IP address, subnet mask, and so on.

For these reasons, the combination of elements recited in claim 5 is allowable. Dependent claims 2-4 and 6-11 are allowable for at least the same reasons as claim 5 and due to the additional elements added by each of these dependent claims.

Claim 12

Independent Claim 12 recites a system including a hardware subsystem, an application database referencing a first software object that corresponds to a manner of processing information associated with an electrical signal. A self-configuring application services system includes a configuration module coupled to the hardware

subsystem and is coupled to retrieve application service configuration information from the application database, and includes the first software object.

Additionally, a signal database stores communications protocol interface configuration information corresponding to a manner of managing communication between the hardware subsystem and the application services system via a plurality of communication protocols and references a second software object that corresponds to a manner of processing information associated with an electrical signal and associate an event code with the electrical signal.

Additionally, a self-configuring interface system is coupled to the hardware subsystem and the application services system and includes a configuration module coupled to retrieve the second software object and retrieve interface configuration information from the signal database to facilitate communication between the hardware subsystem and the self-configuring application services system via a plurality of communication protocols.

Once again, the configuration database of Krivoshein does not contemplate storing communications protocol interface configuration information associated with a plurality of communications protocols but only stores predetermined communications protocol utilized in the digital control system of Krivoshein. Moyne and Krivoshein fail to teach or suggest operation via a plurality of communications protocols, and as discussed above with regard to Moyne the disclosed system does not contemplate having a plurality of devices operating on different protocols.

For these reasons, Moyne and Krivoshein, either alone or combined, fail to teach or suggest the elements recited in Claim 12. Dependent Claims 13-22 are allowable for at least the same reasons as Claim 12 and due to the additional limitations added by each of these dependent claims.

Claim 29

Independent Claim 29 recites a method for processing electrical signals in a

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system including a hardware subsystem that includes a set of components adapted to carry electrical signals, each electrical signal associated with one from the group of a sensing operation and a control operation. The method includes retrieving application service configuration information that associates a first set of software objects with at least one electrical signal and retrieving the first set of software objects in accordance with the application service configuration information.

The method further includes determining a required communications protocol from a plurality of communication protocols and selecting a communications protocol and retrieving communications interface configuration information that corresponds to the hardware subsystem and which associates a second set of software objects with at least one electrical signal and automatically generating a hardware interface for managing communication between the software object and the hardware subsystem in accordance with the communications interface configuration information, the interface including associating an event code with each electrical signal.

Moyne and Krivoshein, either alone or combined, fail to teach or suggest selecting and retrieving communications interface configuration information based on selecting a communication protocol from a plurality of communication protocols. Instead, the configuration database of Krivoshein merely includes parameters associated with a single predetermined communications protocol utilized in the digital control system of Krivoshein and not selecting a required communications protocol from a plurality of communication protocols.

For these reasons, the combination of elements recited in Claim 29 is allowable and dependent claims 30-37 are allowable for at least the same reasons as Claim 29 and due to the additional elements added by each of these dependent claims.

Conclusion

The present patent application is in condition for allowance. Favorable consideration and a Notice of Allowance are respectfully requested. **Should the**

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Examiner have any further questions about the application, Applicants respectfully request the Examiner to contact the undersigned attorney at (425) 455-5575 to arrange for a telephone interview to discuss the outstanding issues. The Commissioner is hereby authorized to charge any deficiency of fees submitted herewith, or credit any overpayment, to Deposit Account No. 07-1897.

Respectfully submitted,
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